

Participant Questionnaire

Participant number: #1

Date: 6/28/23

Location: Brescia, IT

HRC Study / Algorithms tested: ~~HAMP~~ HAMP-S, STAP-PPE, HAMP-A

Study Conducted by: Jared Flowers

Participant link lengths/dimensions: (meters, "spine" is pelvis to shoulder midpoint, "shoulders" is shoulder to shoulder)

| | |
|-----------|-------------|
| Spine | <u>0.36</u> |
| Neck | |
| Shoulders | <u>0.36</u> |

| | |
|----------------|-------------|
| Left Upper Arm | <u>0.3</u> |
| Left Forearm | <u>0.25</u> |

| | |
|-----------------|-------------|
| Right Upper Arm | <u>0.3</u> |
| Right Forearm | <u>0.25</u> |

Participant joint diameter: (meters)

| | |
|------------|-------------|
| Left Elbow | <u>0.08</u> |
| Left Wrist | <u>0.06</u> |

| | |
|-------------|-------------|
| Right Elbow | <u>0.08</u> |
| Right Wrist | <u>0.06</u> |

Questions:

- A. How safe did you feel? (0 is not safe at all, 5 is neutral, 10 is very safe)
- B. Do you think the robot hindered your motions during the task? (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion)
- C. Did the robot perform logical motions? (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you)
- D. What is your overall satisfaction with the HRC task? (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot)

For Task 1 (engine parts): (circle your answer to each question)

| Task 1, Method 1: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| Question A: (0 is not safe at all, 5 is neutral, 10 is very safe) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question B: (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question C: (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question D: (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| Task 1, Method 2: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| Question A: (0 is not safe at all, 5 is neutral, 10 is very safe) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question B: (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question C: (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question D: (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| Task 1, Method 3: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| Question A: (0 is not safe at all, 5 is neutral, 10 is very safe) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question B: (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question C: (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question D: (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Comments:

Some cell phone use, performed tasks quickly,
sometimes started tasks slightly ahead/behind instruction

For Task 2 (Sharework parts: metal tabs, cylinders, pallets): (circle your answer to each question)

| Task 2, Method 1: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| Question A: (0 is not safe at all, 5 is neutral, 10 is very safe) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question B: (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question C: (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question D: (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| Task 2, Method 2: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| Question A: (0 is not safe at all, 5 is neutral, 10 is very safe) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question B: (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question C: (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question D: (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| Task 2, Method 3: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|
| Question A: (0 is not safe at all, 5 is neutral, 10 is very safe) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question B: (0 is robot completely prevented your motions, 5 is neutral, 10 is robot did not impede you motion) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question C: (0 is robot motions made no sense to you, 5 is neutral, 10 is robot motions made sense to you) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Question D: (0 is you would not work in this HRC cell again, 5 is neutral, 10 is you enjoyed working in this cell with the robot) | | | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Comments:

3